

**WHAT IS CLAIMED IS:**

1           1.       A method of making a cathode for a primary lithium battery comprising  
2 coating an expanded metal grid including aluminum with a composition including a cathode  
3 active material.

1           2.       The method of claim 1, wherein the composition is a slurry.

2           3.       The method of claim 1, wherein the cathode active material includes a  
3 manganese dioxide, a  $CF_x$ , iron disulfide, or a vanadate.

1           4.       The method of claim 1, wherein the composition includes a carbon source.

1           5.       The method of claim 4, wherein the carbon source includes a carbon fiber, a  
2 graphite, an acetylenic carbon, or a combination thereof.

1           6.       The method of claim 1, wherein the composition includes a binder.

1           7.       The method of claim 6, wherein the binder includes an organic polymer.

1           8.       The method of claim 1, wherein the grid includes a 1000 series aluminum, a  
2 2000 series aluminum alloy, a 3000 series aluminum alloy, a 5000 series aluminum alloy, a  
3 6000 series aluminum alloy, or a 7000 series aluminum alloy.

1           9.       The method of claim 1, wherein the grid includes a 6000 series aluminum  
2 alloy.

1           10.      The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0-0.4% by weight of chromium.

1           11.      The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0.01-6.8% by weight of copper.

1           12.      The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0.05-1.3% by weight of iron.

- 1           13.     The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0.1-7% by weight of magnesium.
- 1           14.     The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0-2% by weight of manganese.
- 1           15.     The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0-2% by weight of silicon.
- 1           16.     The method of claim 1, wherein the grid includes an aluminum alloy  
2 including less than 0.25% by weight of titanium.
- 1           17.     The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0-8.2% by weight of zinc.0-2.3% by weight of nickel,
- 1           18.     The method of claim 1, wherein the grid includes an aluminum alloy  
2 including 0-2.3% by weight of nickel.
- 1           19.     The method of claim 1, wherein the grid has a resistivity of less than 100  
2 mΩ/cm.
- 1           20.     The method of claim 1, wherein the grid has a resistivity of less than 10  
2 mΩ/cm.
- 1           21.     The method of claim 1, further comprising pulling the grid before coating.
- 1           22.     The method of claim 1, further comprising leveling the grid before coating.
- 1           23.     The method of claim 1, further comprising drying the grid after coating.
- 1           24.     The method of claim 23, further comprising calendering the grid after drying.
- 1           25.     The method of claim 24, wherein calendering includes passing the grid  
2 through a gap.
- 1           26.     The method of claim 25, wherein the gap has a thickness of less than 25 mils.

1           27.     The method of claim 26, further comprising heat treating the grid after  
2 calendering.

1           28.     The method of claim 27, further comprising drying the grid under vacuum  
2 after heat treating.

1           29.     The method of claim 9, wherein the composition is a slurry.

1           30.     The method of claim 9, wherein the cathode active material includes a  
2 manganese dioxide, a  $CF_x$ , iron disulfide, or a vanadate.

1           31.     The method of claim 9, wherein the composition includes a carbon source.

1           32.     The method of claim 31, wherein the carbon source includes a carbon fiber, a  
2 graphite, an acetylenic carbon, or a combination thereof.

1           33.     The method of claim 9, wherein the composition includes a binder.

1           34.     The method of claim 31, wherein the binder includes an organic polymer.

1           35.     The method of claim 9, further comprising pulling the grid before coating.

1           36.     The method of claim 9, further comprising leveling the grid before coating.

1           37.     The method of claim 9, further comprising drying the grid after coating.

1           38.     The method of claim 37, further comprising calendering the grid after drying.

1           39.     The method of claim 38, wherein calendering includes passing the grid  
2 through a gap.

1           40.     The method of claim 39, wherein the gap has a thickness of less than 25 mils.

1           41.     A method of making a cathode for a battery comprising:  
2 coating an expanded metal grid including an aluminum alloy with a composition  
3 including a carbon source, a binder, and a cathode active material, wherein the cathode active  
4 material includes a manganese dioxide;

5 calendering the grid after coating; and  
6 heat treating the grid after calendering.

1 42. The method of claim 41, wherein calendering includes passing the grid  
2 through a gap.

1 43. The method of claim 42, wherein the gap has a thickness of less than 25 mils.

1 44. The method of claim 43, further comprising drying the grid after coating and  
2 before calendering.

1 45. The method of claim 41, further comprising sizing the grid after calendering.

1 46. The method of claim 41, further comprising edge-cleaning the grid after  
2 calendering.

1 47. The method of claim 41, further comprising drying the grid under vacuum  
2 after heat treating.

1 48. The method of claim 41, wherein the aluminum alloy is a 2000 series  
2 aluminum alloy, a 3000 series aluminum alloy, a 5000 series aluminum alloy, a 6000 series  
3 aluminum alloy, or a 7000 series aluminum alloy.

1 49. The method of claim 41, wherein the aluminum alloy is a 6000 series  
2 aluminum alloy.

1 50. The method of claim 41, wherein the aluminum alloy including 0-0.4% by  
2 weight of chromium, 0.01-6.8% by weight of copper, 0.05-1.3% by weight of iron, 0.1-7%  
3 by weight of magnesium, 0-2% by weight of manganese, 0-2% by weight of silicon, less than  
4 0.25% by weight of titanium, 0-2.3% by weight of nickel, and 0-8.2% by weight of zinc.

1 51. The method of claim 41, further comprising pulling the grid before coating.

1 52. The method of claim 41, wherein the binder includes an organic polymer.

1 53. The method of claim 52, wherein the binder includes  
2 poly(tetrafluoroethylene), poly(vinylalcohol), or a combination thereof.

1           54.     The method of claim 41, wherein the carbon source includes a carbon fiber, a  
2     graphite, an acetylenic carbon, or a combination thereof.

1           55.     The method of claim 41, wherein the grid has a resistivity of less than 100  
2     mΩ/cm.

1           56.     The method of claim 41, wherein the grid has a resistivity of less than 10  
2     mΩ/cm.

1           57.     A method of making a cathode for a battery comprising:  
2             coating an expanded metal grid including an aluminum alloy with a composition  
3             including a carbon source, a binder, and a cathode active material, wherein the cathode active  
4             material includes a manganese dioxide;  
5             drying the grid after coating;  
6             calendering the grid to a thickness of less than 20 mils after drying;  
7             sizing the grid after calendering;  
8             edge-cleaning the grid after sizing;  
9             heat treating the grid after edge-cleaning; and  
10            drying the grid under vacuum after heat treating the grid.